

### Claims

1. A method for isolating and culturing mesenchymal stem cells from umbilical cord blood, comprising the steps of:

5        adding an anti-coagulant to the umbilical cord blood having a volume of more than 45 ml per unit, which is pure umbilical cord blood obtained within 24 hours after parturition;

10        diluting the resulting mixture of the anti-coagulant and umbilical cord blood with an alpha-minimum essential medium (aMEM), followed by centrifugation to harvest monocytes; and

15        subjecting the obtained monocytes into suspension culture in the aMEM medium containing Stem Cell Factor, GM-CSF (granulocyte-macrophage colony-stimulating factor), G-CSF (granulocyte colony-stimulating factor), IL-3 (interleukin-3) and IL-6 (interleukin-6).

2. The method as set forth in claim 1, wherein the umbilical cord blood is diluted with 2-fold volume of the aMEM medium, overlapped on Ficoll-Hypaque and subjected to centrifugation so as to harvest monocytes.

20        3. The method as set forth in claim 1, wherein the aMEM medium for culturing monocytes further comprises an antibiotic, an anti-fungal agent, glutamine and fetal bovine serum.